

Claims:

1           21. (new) An apparatus for transmitting a signal from deep in a wellbore  
2 through a string of tubulars said apparatus comprising  
3           a signal conductor and a tubular  
4           said signal conductor located adjacent an interior surface of said  
5 tubular,

6           a thin coating on the interior surface of the tubular, the thin  
7 coating for smoothing said interior surface to improve the hydraulic and  
8 hydrodynamic properties of the tubular, said thin coating of a sufficiently small  
9 thickness that hydrodynamic or pressure carrying properties of the tubular are  
10 not adversely affected, and

11           said signal conductor beneath said thin coating.

1           22. (new) The apparatus of claim 21 wherein said thin coating is between  
2 0.127 mm and 2 mm thick.

1           23. (new) The apparatus of claim 21 wherein the signal conductor is at least  
2 one wire.

1           24. (new) The apparatus of claim 23 wherein the wire has a diameter between  
2 0.127 mm to 0.0787 mm.

1           25. (new) The apparatus of claim 21 wherein said signal conductor is foil.

1           26. (new) The apparatus of claim 21 wherein said signal conductor comprises  
2 a micro strip line, the micro strip line comprising a conductive core and an insulating  
3 layer.

1           27. (new) The apparatus of claim 26 wherein the conductive core is between  
2 0.048 mm and 0.05 mm thick.

1           28. (new) The apparatus of claim 27 wherein the micro strip line has a  
2 thickness of at least 0.65 mm and not more than 1 mm.

1           29. (new) The apparatus of claim 21 wherein said signal conductor extends  
2 substantially the entire length of said tubular.

1           30. (new) The apparatus of claim 21 further comprising a plurality of signal  
2 conductors including a first signal conductor and a second signal conductor, the first  
3 signal conductor carrying a signal and the second signal conductor carrying

4 substantially the same signal.

1 31. (new) The apparatus of claim 21 wherein said signal conductor is provided  
2 with means for transferring said signal from said signal conductor to another signal  
3 conductor in an adjacent tubular.

1 32. (new) The apparatus of claim 21 wherein said signal conductor is provided  
2 with an antenna at at least one end of said tubular.

1 33. (new) The apparatus of claim 21 wherein a receiving antenna is provided  
2 at one end of said tubular and a transmitting antenna is provided at the other end of  
3 said tubular, said signal conductor arranged therebetween.

1 34. (new) The apparatus of claim 21 further comprising an amplifier-repeater,  
2 said amplifier-repeater comprising a signal amplifier and a power source.

1 35. (new) The apparatus of claim 21 wherein said tubular has a wall recess  
2 in the interior surface and said signal conductor is arranged in said recess.

1 36. (new) The apparatus of claim 21 wherein said tubular is drill pipe.

37. (new) The apparatus of claim 21 wherein the tubular has two spaced-apart  
ends, the apparatus further comprising

a ring transmitter-receiver amplifier-repeater at each end of the  
tubular.

1 38. (new) The apparatus of claim 37 wherein each ring is not connected to  
2 the signal conductor.

1 39. (new) The apparatus of claim 38 wherein

2 the signal conductor comprises four wires embedded in the thin  
3 coating, each wire of the four wires having a portion at each end of the tubular,  
4 each of said portions forming a part of a circle, each wire insulated from the  
5 remaining wires.

1 40. (new) A method for transmitting a signal from deep in a wellbore through  
2 a string of tubulars, the method comprising passing said signal through an apparatus,  
3 the apparatus comprising

4 a signal conductor,

5 said signal conductor located adjacent an interior surface of a  
6 tubular in the string of tubulars,

7                   a thin coating on the interior surface of the tubular, the thin  
8 coating for smoothing said interior surface to improve the hydraulic and  
9 hydrodynamic properties of the tubular, said thin coating of a sufficiently small  
10 thickness that hydrodynamic or pressure carrying properties of the tubular are  
11 not adversely affected, and

12                   said signal conductor beneath said thin coating.